

Income Inequality and Residential Segregation in “Egalitarian” Sweden: Lessons from a Least Likely Case

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Abstract: Drawing on individual-level full-population data from Sweden, spanning four decades, we investigate the joint growth of income inequality and income segregation. We study Sweden as a “least likely” case comparison with the United States, given Sweden’s historically low levels of inequality and its comprehensive welfare state. Against the background of U.S.-based scholarship documenting a close link between inequality and segregation, our study provides an important insight into the universality of this relationship. Using entropy-based segregation measures, we analyze trends and patterns of income segregation between and within income groups along different sociodemographic dimensions—migration background and family type. Our findings reveal that growing income inequality in the last 30 years has been accompanied by a sharp uptake in income segregation, especially for the bottom quartile of the income distribution who are facing increasing isolation. Income segregation is most extensive for individuals with children in the household, among whom it has increased at a higher rate than those without children. Interestingly, income segregation is lower among non-Western minorities than among majority-group Swedes. We conclude that changes to the welfare state, liberalization of the housing market, and rapid demographic changes have led Sweden onto a path that is difficult to distinguish from that taken by the United States.

Keywords: income segregation; income inequality; information theory index; welfare state

Citation: Mutgan, Selcan, and Jonathan J. B. Mijs. 2023. “Income Inequality and Residential Segregation in ‘Egalitarian’ Sweden: Lessons from a Least Likely Case.” *Sociological Science* 10: 374-402.


Received: December 6, 2022

Accepted: January 14, 2023

Published: May 10, 2023

Editor(s): Ari Adut, Cristobal Young

DOI: 10.15195/v10.a12

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RISING levels of income inequality in the West have led to concerns that the social divide between rich and poor is growing (Duncan and Murnane 2011; Mijs and Roe 2021; Reardon and Bischoff 2011). Although the statistical reality of growing inequality is virtually undisputed (Atkinson, Piketty, and Saez 2011; McCall and Percheski 2010; Neckerman and Torche 2007; Piketty and Saez 2003), it has not yet been determined whether this trend has been universally accompanied by increasing income segregation (Logan et al. 2020; Reardon et al. 2018). In other words, are rich and poor simply becoming *richer* and *poorer*, or has increasing economic inequality also cemented a social and spatial economic divide?

Our ability to answer this question is limited by three things. First, mainstream research on the topic tends to be situated in the context of the United States—the paradigmatic case of economic inequality in the West (Keeley 2015). However, its comparatively high levels of inequality and decentralized governance structure make the United States an unsuitable case from which to draw conclusions about the general relationship between growing inequality and segregation (Quillian and Lagrange 2016). Second, comparative European scholarship on segregation tends to focus on racial and ethnic, not socioeconomic, segregation. In recent decades, increasing ethnic diversity resulting from international migration has led to an

abundance of research on racial and ethnic segregation in European cities (Anderson, Lyngstad, and Sleutjes 2018; Boterman et al. 2019), whereas the sociospatial consequences of growing income inequality across Europe (OECD 2015) remain understudied—with some notable exceptions (van Ham et al. 2020, 2021). Third, studying the joint trends of income inequality and income segregation requires granular income and residential data at the individual or household level for long periods of time, which are not typically available. The lack of such data means that the depth of analysis and the period over which socioeconomic segregation can be assessed remain limited, as does researchers' ability to track changes over time and to detail both group differences and regional variation.

To contribute to a more in-depth scholarly understanding of the linkage between income inequality and income segregation, we employ longitudinal individual-level population data from Sweden. The United States, arguably, is a "most likely case" (Gerring 2007) for income inequality and segregation to go hand in hand, owing to the nation's long history of discriminatory housing policies (Massey and Denton 1993), the close link between housing prices and educational opportunities (Duncan and Murnane 2011), and stark disparities in neighborhood resources and risk of exposure to external sources of stress (e.g., exposure to violence and disorder) that raise the stakes for residential choice (Sampson, Raudenbush, and Earls 1997). In comparison, "egalitarian" Sweden is a least likely case given historically low levels of income inequality and a comprehensive welfare state, specifically, active government intervention in the fields of housing and poverty relief (Andersson and Kährik 2015; Turner and Whitehead 2002). At the same time, growing income inequality, the marketization of housing policies, and welfare liberalization have put Sweden on a trajectory toward more liberal economies such as the United States (Hedin et al. 2012; OECD 2015). Although it is not our intention to produce a one-on-one comparison between Sweden and the United States, we hope to provide an informative case to broaden our understanding of how income inequality and segregation develop over time.

In addition to the theoretical purchase of our case comparison, situating our analysis of income inequality and segregation in Sweden enables us to draw on unique individual-level population data, which allow for an investigation of regional variation and group differences over a long period of time, from 1978 to 2017. With these administrative longitudinal data, we analyze overall trends in income inequality and segregation in Sweden, and we detail between-neighborhood income segregation in the three most populous municipalities in the country—Stockholm, Malmö, and Gothenburg.

Our results indicate that income inequality in Sweden (measured on Theil's index) tripled between 1978 and 2017. These growing income disparities have been accompanied by increasing residential income segregation in the three largest municipalities, approaching levels documented in U.S. scholarship. Our findings support three main conclusions. First, between 1990 and 2017, concentrated poverty (especially among those in the lower quartile of the income distribution) has increased sharply, driving up overall levels of income segregation. Meanwhile, levels of concentrated affluence are high and have remained stable over time. Second, looking at income inequality and segregation across ethnic groups, we find that

income disparities have grown among both the majority group and the ethnic minority population. Although this has been accompanied by higher levels of segregation among the former, segregation among ethnic minorities has remained at a lower level during the 1990s and has only started to increase in the 2000s, a testament to hampered residential mobility into majority-Swedish neighborhoods. Third, we find that income segregation among individuals with children, compared with those without, has been consistently higher and has increased at a faster pace, mostly due to a larger relative increase in concentrated poverty.

Our findings inform future research and policy-making by showing that, despite Sweden's universal welfare system, the increase in income inequality witnessed in the last 40 years has gone hand in hand with greater income segregation, the impact of which has been uneven across sociodemographic groups. We reflect on implications for theory, research, and policy in the conclusion.

Background

Inequality and Segregation in the United States

Since the 1980s, the United States has had the highest level of household disposable income inequality among the Western Organisation for Economic Co-operation and Development (OECD) countries. The country has also experienced one of the largest increases in income inequality, from a Gini coefficient of 0.35 in 1979 to 0.41 in 2016 (Keeley 2015). Scholarship focused on the United States has established that these high and growing levels of income inequality are closely linked to income segregation. Based on a sample of the 117 largest U.S. metropolitan areas, Bischoff and Reardon (2014) estimate that about 70 percent of change in income segregation among families between 1970 and 2011 is explained by growing income inequality, net of other time-varying factors at the metropolitan level and time-period effects. In the 1980s, the United States experienced a particularly sharp rise in income segregation, which then slowed in the 1990s, likely due to the increasing number of mixed-income housing developments in urban areas and the demolition of large, high-density, low-income housing projects (Reardon and Bischoff 2011). In the 2000s, levels of segregation again increased as income inequality grew, except for a brief decline following the Great Recession (Bischoff and Reardon 2014; Jargowsky and Wheeler 2017).

Research on the sociodemographic aspects of the relationship between income inequality and segregation in the United States lends support to three conclusions. First, income segregation, especially in recent decades, is primarily expressed as segregation of affluence (vis-à-vis overall segregation and segregation of poverty). Traditionally, U.S. scholarship on segregation has focused on the extent to which poverty and affluence are spatially concentrated (Quillian 2012; Reardon and Bischoff 2011). Whereas segregation was the main driver of concentrated poverty in the 1970s and 1980s (Massey and Denton 1993), more recent research finds that concentrated affluence is a greater driver of growing levels of income segregation, which have coincided with increases in top incomes (Reardon and Bischoff 2011).

Second, income segregation in the United States is driven in particular by the growing spatial divide between rich and poor families with children, as parents with the required economic resources move to areas with good public schools, safe neighborhoods, and access to high-quality services such as libraries, parks, and childcare providers (Owens 2016; Sharkey 2008). In the largest metropolitan areas (more than 500,000 residents) the proportion of children living in homogeneously poor or affluent neighborhoods more than doubled between 1970 and 2009, from 15 to 33 percent (Bischoff and Reardon 2014). On the basis of a similar sample of cities, Owens (2016) finds that residential income segregation is fueled almost entirely by families with children in public schools, among whom residential income segregation grew by about 20 percent between 1990 and 2010. Over this same period, segregation among all households instead remained more or less stable (Owens, Reardon, and Jencks 2016).

Third, segregation is more pronounced among Hispanic and African American households than it is among whites. As a consequence of economic inequalities between racial groups, discriminatory lending and real estate practices, and racialized neighborhood choice, black low-income families more frequently live in high-poverty areas than white families with similar levels of income (Logan 2002). Whereas levels of income segregation among black families were lower in the 1970s than they were among whites, segregation among African Americans has since increased at four times the rate found among white families. By 2009, income segregation among black families was 65 percent greater than among whites (Bischoff and Reardon 2014). The level of, and trend in, segregation among Hispanic families follows a similar pattern. Middle-class flight by socially mobile minorities, driven by increasing suburbanization and an expanding middle class, is one of the reasons for the increasing income segregation among black and Hispanic families (Wilson 2011). Over the years, increasing income segregation among these racial groups, along with persistent racially patterned neighborhood sorting, have contributed to the increasing isolation of poor black and Hispanic communities (Jargowsky 2018; Rothwell and Massey 2010).

Inequality and Segregation in Europe and Sweden

Compared with the United States, European countries have historically had lower levels of income inequality. However, from a relatively low baseline, income inequality has grown steeply in many European countries since the 1970s and 1980s. In fact, of all the Western OECD countries, Sweden has seen the largest increase in income inequality over recent decades, even though it is still among the OECD countries with a relatively low level of income inequality (OECD 2015).

Figure 1 shows the trend in income inequality between 1978 and 2017 for Sweden as a whole (~10.2 million inhabitants in 2017) and for the country's three most populous municipalities, Stockholm (~950,000), Gothenburg (~565,000), and Malmö (~330,000), taking 1990 as the reference year. Although income inequality among the working-age population was stable between 1978 and 1990, it has since grown by about 50 percent over the past 40 years, from a Gini coefficient of 0.25 to 0.36, reaching the level of income inequality experienced in the United States at

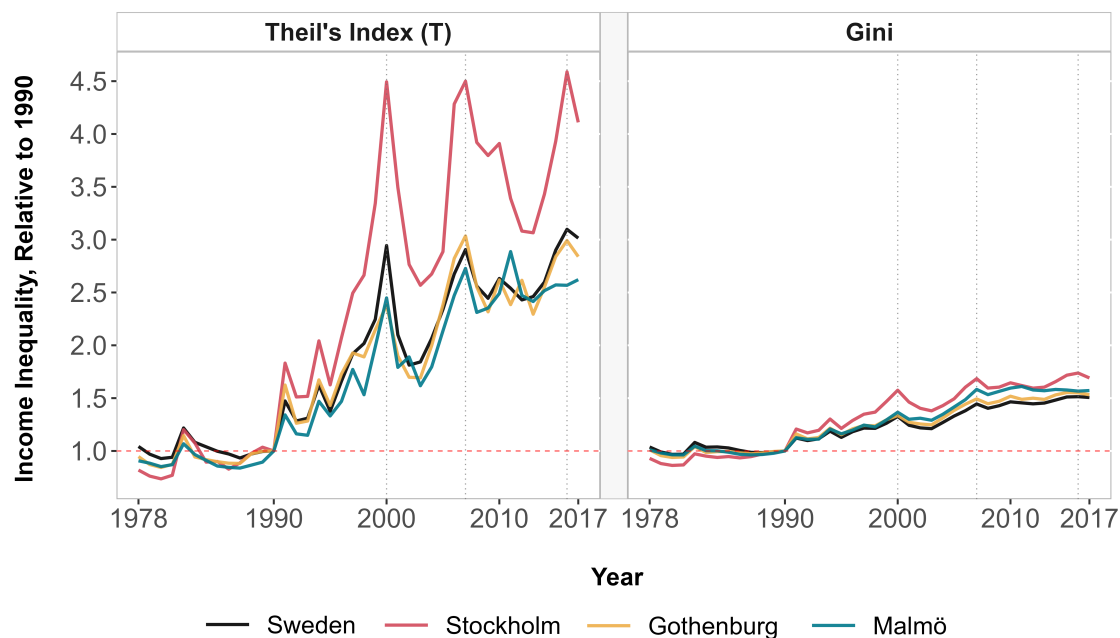


Figure 1: Trends in income inequality in Sweden and the three most populous municipalities, 1978 to 2017. *Notes:* The figure presents levels of inequality as measured by Theil's index (T) and the Gini index, relative to the levels in 1990. All measures are based on continuous individual-level disposable income adjusted for inflation using the 2017 consumer price index as the baseline. The figure is based on income data for individuals aged 18 to 65. Further information about the data source can be found in the Data and Methods section.

the end of the 1970s (detailed inequality measures are included in Table A1 of the online supplement). Theil's index of income inequality, which is more sensitive to top incomes, describes a 200 percent increase in income inequality in Sweden, from 0.11 in the 1970s to 0.33 in the most recent period. Vertical lines in Figure 1 mark the 2001 financial crisis, the 2007 Great Recession, and the 2016 housing bubble, each of which led to a short-term decrease in income inequality but did not change the overall trajectory (Roine and Waldenström 2012).

This upward trend in income inequality in Sweden and across Europe has been well documented (Keeley 2015). Research on the relationship between income inequality and segregation, however, has been more limited. Most extant studies tend to be comparative and to use different economic measures across countries, focusing only on specific income groups and/or short periods of time. Nonetheless, these studies suggest a close link between inequality and segregation in various European countries, although absolute levels of income segregation are much lower than in the United States (Musterd 2005; Quillian and Lagrange 2016). For example, in a study of 12 European capitals, Musterd et al. (2017) found growing levels of income segregation between top and bottom income quintiles in Oslo and Stockholm, but decreasing segregation in Amsterdam (see also Costa and De Valk 2018). Hedin (2012) describes a growing concentration of the poor and the rich

in Stockholm, Malmö, and Gothenburg from the mid-1980s to 2001. In one of the most recent studies, Andersson and Kährik (2015) found that the top quintile of the income distribution constitutes the most segregated income group in the Stockholm region and that top income earners had become increasingly concentrated to certain parts of the city over the period from 1990 to 2010.

Regarding the three conclusions drawn from the U.S.-based literature, European scholarship supports the first: income segregation is characterized first and foremost by segregation of the affluent. European scholarship, however, tends to focus exclusively on low- and high-income groups, overlooking changes within middle-income groups. This is an important dimension to consider given that Sweden has traditionally had high wage-income equality and that middle-income earners have comprised a large proportion of the working population. However, labor market restructuring and changes in tax policies from the 1990s onwards have led to a shrinking middle-income population, among whom the gap between lower and higher income groups has increased (Andersson and Kährik 2015; Hedin et al. 2012).

Very little research in Europe has addressed the second and third conclusions drawn from the U.S. literature, that is, that income segregation is particularly driven by a growing spatial divide between rich and poor families with children and that income segregation is most pronounced among racial and ethnic minorities. A notable exception of a study looking at income segregation between ethnic minorities is Andersson and Kährik's (2015), which finds that ethnic segregation in the Stockholm region overlaps with income segregation, such that immigrant-dense areas also tend to have lower levels of income. In one of the most recent studies on ethnic segregation and income sorting, Malmberg and Clark (2021) further suggest that spatial sorting of foreign-born individuals is a potential driver of income segregation in Sweden. While empirical evidence on causal mechanisms remains limited, scholars have suggested that changes in labor market policies, tax policies, and the housing market, such as the shift from a tenure-neutrality policy (i.e., a housing market where there is no difference in the economic gains associated with different tenure types) toward an increasingly segmented market, may have paved the way for increasing income and ethnic segregation in Sweden (Andersson and Kährik 2015; Böhlmark, Holmlund, and Lindahl 2016; Hedin et al. 2012). Although welfare state transfers on income and housing remain financially important for low-income groups, there has been a decrease in the extent and effectiveness of these subsidies over time (Musterd et al. 2017; Turner and Whitehead 2002).

In addition to the influence of housing-related policies, Sweden has also experienced important demographic changes since the 1990s as the country has shifted from a relatively ethnically homogenous to a multiethnic society. In 2020, Swedes of immigrant origin comprised about a quarter of the population. Housing assignment policies have had long-lasting effects on where immigrants settle and how they move, even years after their initial arrival in Sweden (Vogiazides and Mondani 2020). Overall, these changes in demographic structure, labor market policies, housing tenure policies, welfare state transfers, and taxation are likely to have contributed to increasing segregation along ethnic as well as socioeconomic lines.

At the same time, the Swedish government has adopted various liberalization reforms in the education market. A universal school voucher system, introduced in 1992, brought independent schools (similar to charter schools in the United States) into the education system, along with free school choice. Under this policy, students can choose up to three schools from among any of the public schools in their municipality, which opens access to schools in affluent neighborhoods.¹ Whereas proximity-based allocation rules dominate student allocation to public schools, independent schools operate based on a first-come first-served principle. More importantly, both public and independent schools are practically free for all students because schools receive per pupil funding from the municipality. Although we do not know of any comprehensive studies on how families make residential choices in the Swedish context, Bernelius and Vaattovaara (2016) find that schooling opportunities are not the main factor affecting residential choices of parents in the Finnish context. Rather, parents' residential choices tend to be affected by the overall neighborhood quality, as well as housing opportunities (Bernelius and Vaattovaara 2016; Wessel and Nordvik 2019). Given its universal school choice, we would expect levels of income segregation among families in Sweden to be similar to those of non-parents, and less pronounced than they are in the United States (Owens 2016).

In the following, we first ask whether the general trend in income inequality described above has been accompanied by growing income segregation. We then zoom in on Sweden's three largest municipalities to detail patterns of spatial divisions between different income groups and to study whether income segregation has followed a different path for various demographic groups, such as majority and minority ethnic groups and households with and without children. Before presenting our findings, we discuss our data and methodological strategy in the next section.

Data and Methods

Study Population and Spatial Unit of Analyses

This study uses administrative register data from Statistics Sweden that provide detailed information on individual-level demographic background, labor market history, household composition, and geo-coded residential locations at the 100-by-100-meter level for every person residing in Sweden. In our main analyses, we draw on these 100-by-100-meter locations, aggregated into small neighborhood units (see below). A strength of these register data is that they allow us to merge information from different administrative agencies using unique individual identifiers, which enables a link between individuals and their children, parents, and grandparents. Missing data are virtually non-existent. As such, our analyses of income segregation provide an important complement to census and survey data, because they allow for an investigation of neighborhood income segregation at a more granular level without the need to make assumptions about economic and ethnic variation within different neighborhoods (Reardon et al. 2018).

We test for the overall statistical association between income inequality and income segregation based on all municipalities with a population of at least 10,000

residents in a given year (231 of 290 municipalities); hence the least populous areas in our data are at least the size of a micropolitan area in the United States. When we analyze detailed trends in income segregation, we focus on the three most populous municipalities in Sweden: Stockholm, Gothenburg, and Malmö. Throughout this study, we focus on municipalities rather than metropolitan areas because Sweden is characterized by a decentralized governance, meaning that the levels of income tax and welfare services, including education policies, vary between municipalities. Moreover, municipalities represent a reasonable border for residential choice, as about two-thirds of all registered moves each year (which also include multiple mobility events by individuals) are between neighborhoods within the same municipality, and around 45 percent of the mobility events between municipalities are also between larger metropolitan areas rather than within metropolitan areas (counties in Sweden). Whereas past studies have focused on just one of these three cities (e.g., Andersson and Kährrik 2015), we follow Hedin (2012) in studying all three major cities in Sweden, which allows us to compare trends in income segregation across different parts of the country.

We study residential segregation at the DeSO level (*Demografiska Statistikområden* in Swedish, which roughly translates to demographic statistical area). DeSOs are non-administrative neighborhoods defined by Statistics Sweden. The majority of extant research on segregation in Sweden relies on SAMS (small areas for market statistics), whose size differs substantially both between and within cities, making it difficult to compare absolute segregation values as a result of the modifiable areal unit problem (Fotheringham and Wong 1991). We note two advantages to using DeSOs. First, these areas have much more similar population sizes, which allows for a direct comparison of segregation measures across time and place. Second, DeSOs take into account physical features such as bridges, highways, and lakes, which are essential to the way in which segregation manifests in urban environments (Roberto and Hwang 2017). These two factors decrease the potential bias to which studies that rely on SAMS are subject. In the most recent time period, Stockholm, Gothenburg, and Malmö count 545, 307, and 193 DeSOs, respectively, with an average population of 1,162, 1,231, and 1,127 individuals aged 18 to 65 in each area.²

Within municipalities and neighborhoods, we focus on individuals aged between 18 and 65 to exclude age groups that are typically not on the labor market.³ We further focus our analysis of residential income segregation on the years between 1990 and 2017, which is the period in which income inequality in Sweden increased. Our age and area restrictions mean that our total study population across the three municipalities ranges from 817,660 in 1990 to about 1,200,000 in 2017 owing to urban-centric population growth (Keuschnigg, Mutgan, and Hedström 2019). Note that further restricting our sample to prime-age individuals aged 30 to 65 results in a much smaller sample size, especially for less dense neighborhoods, and of course yields slightly different, less precise quantitative estimates but leaves our substantive conclusions intact.

Measures of Income and Segregation

We measure income as individual-level disposable income, which comprises an individual's income from work, social benefits, and capital, minus taxes. Given that labor market earnings are highly regulated in Sweden due to unionization, wage-income inequality has been quite stable over the years. Disposable income, hence, is advantageous as it also reflects capital-based income inequalities. We adjust disposable income for inflation using the consumer price index, taking 2017 as our baseline.⁴

For the analysis of income segregation across ethnic groups, we distinguish between an ethnic majority group and a minority group based on country-of-birth information for individuals themselves and their parents. Following Jarvis, Kawalerowicz, and Valdez (2017), we use an ancestry classification that prioritizes maternal ancestors over paternal ancestors in cases where data are non-missing. If an individual has at least one Swedish-born parent, the person is classified as majority-group Swedish. When no ancestry information is available, we use the individual's own country of birth as the country of origin.

Whereas ethnic groups with non-Swedish Nordic or Western ancestry are typically not segregated from the majority population, non-Western immigrants and their children tend to be (Malmberg et al. 2018). Anti-immigrant sentiments, which are on the rise in Sweden, are focused on these non-Western ethnic minority groups, whose social position tends to be more marginalized than that of Nordic or Western minorities (Valdez 2014). For these reasons, we systematically compare income segregation among the majority group with Swedish ancestry and among non-Western origin ethnic minorities, which constitute about 80 percent and 10 percent of our sample in 1990 and 65 percent and 29 percent in 2017, respectively, reflecting the significant increase in immigration into Sweden (Statistics Sweden 2020).⁵

In analyses looking at the association between inequality and segregation, we measure inequality using the Gini index. We focus on Gini rather than Theil's index because our aim is understanding the overall relationship between inequality and segregation rather than the changes that are sensitive to the top or bottom of the income distribution (see Figure 1).

We quantify levels of segregation between different groups of individuals using the information theory index, H (James and Taeuber 1985; Reardon and O'Sullivan 2004). The information theory index is an evenness measure based on entropy, ranging from zero to one, where zero indicates that the composition of income groups in each neighborhood is identical to the composition of the overall population in that city. Values between zero and one indicate the degree to which the composition of neighborhood deviates from the overall income composition. A value of one indicates complete segregation, where all individuals live in perfectly homogeneous neighborhoods with individuals from the same income group.

Our analyses report two versions of the information theory index. The first is the rank-order information theory index, H^R (Reardon et al. 2006; Reardon and Bischoff 2011), which relies on rank-order income groups based on percentiles and which measures how populations below and above each percentile threshold are segregated between neighborhoods. In recent work, Reardon et al. (2018) and Logan et al. (2020) have noted that the use of grouped income data and sampling weights

tends to bias segregation measures. Having access to full-population individual-level income data, we obtain unbiased estimates of income segregation in Sweden without the need for further sample adjustments. Given that small unit sizes could lead to biased estimates, access to individual-level data also ensures that each unit in our study (DeSOs) have large enough population compared with the number of units (Reardon and Bischoff 2011).

An advantage of using the rank-order information theory index is that it is independent of changes in income inequality between households, and thus allows for comparisons over time and space. Moreover, it allows us to separately assess the segregation of affluence and poverty (Reardon and Bischoff 2011). On the other hand, this measure may conceal important information about which income groups are more or less segregated from each other, because it only splits the sample into two groups at each income percentile—those below the income rank in question and those above or equal to the relevant threshold. Hence, to allow for a more granular analysis, and to provide a point of comparison, we also draw on the two-group information theory index (or Theil's index, H) as an alternative measure to study segregation between different income groups based on a five-percentile classification.

Analytical Approach

To study how income segregation has changed over time between and within groups, we present exploratory analyses using the rank-order information theory index (H^R) and Theil's segregation index, H . Moreover, to better understand the statistical association between over-time changes in income inequality and income segregation, we estimate fixed-effect regression models. For the model estimations, we rely on all 290 municipalities in Sweden but exclude municipality-year observations if the total population is less than 10,000 (cf. Reardon and Bischoff 2011). This yields an empirical sample of 231 municipalities. As variation in income inequality across municipalities may be driven by various unobserved characteristics, we use municipality-level fixed effects to hold constant all time-constant municipality-level factors that may affect income segregation. That is, we model changes within municipalities over time, in five-year intervals, between 1990 and 2017, and estimate the associated over-time change in income segregation:

$$\hat{H}_{mt} = \alpha + \beta_1 I_{mt} + \beta_2 \log(\text{pop})_{mt} + \beta_3 X_{mt} + \dots + \tau_t + c_m + \epsilon_{mt}, \quad (1)$$

where \hat{H}_{mt} indicates segregation in municipality m at time t , I_{mt} indicates income inequality in municipality m at time t , $\log(\text{pop})_{mt}$ indicates the municipality's population size, and X_{mt} indicates other time-varying municipality-level characteristics. As time-varying municipality-level characteristics, we include proportion of ethnic minorities, proportion of population above age 65, proportion of the working-age population receiving social welfare assistance, proportion of adults above 25 years of age with only compulsory school education, and regional gross domestic product. We present the descriptive statistics for the variables used in our models in Table A2 of the online supplement. Our regression analyses further include area-specific time-invariant fixed effects (c_m) and year fixed effects (τ_t). As such we identify the

Table 1: Estimated effects of income inequality on income segregation. Coefficients from ordinary least squares regressions with municipality fixed effects, 1990 to 2017 (five-year intervals)

	(1)	(2)	(3)	(4)
Gini	0.116 [†]	0.226 [†]	0.122 [†]	0.148 [†]
Gini × Gini		−0.145 [†]	−0.095 [*]	0.109
Year dummies	Yes	Yes	Yes	Yes
Interaction year × Gini	No	No	No	Yes
Time-varying characteristics	No	No	Yes	Yes
<i>N</i>	1,314	1,314	1,314	1,314
Adjusted <i>R</i> ²	0.860	0.861	0.911	0.914

Notes: The unit of observation is municipalities. The sample includes observations (municipality-year) that have more than 10,000 inhabitants in a given year (231 municipalities over time out of 290 total). All analyses include municipality fixed effects. Time-varying municipality-level population characteristics (models (3) and (4)) include log(population size), proportion of ethnic minorities, proportion of population above age 65, proportion of the working-age population receiving social welfare assistance, proportion of adults above 25 with only compulsory school education, and regional gross domestic product. Full model results are presented in Table A3 of the online supplement. * $p < 0.05$; † $p < 0.01$.

statistical association between over-time changes in income inequality and income segregation, ruling out potential sources of unobserved heterogeneity.

Results

The Relationship between Income Inequality and Income Segregation

As we saw in Figure 1, income inequality in Sweden grew substantially between 1990 and 2017. To test for a statistical association between growing income inequality (Gini) and increasing income segregation (rank-order information theory index, H^R), we estimate regressions with municipality-level fixed effects. We estimate four empirical models to identify the over-time change in segregation associated with the observed over-time change in inequality (Table 1). Our baseline model, model (1), shows that the level of income inequality is statistically significantly associated with income segregation ($p < 0.001$). As levels of inequality increased in Sweden's municipalities, so did income segregation in those places: a one-point increase in income inequality is associated with roughly one-tenth of a point increase in income segregation.

Model (2) includes a second-order polynomial of income inequality (Gini) in order to allow for a nonlinear relationship between income inequality and income segregation. Models (3) and (4) also include indicators of population size, the proportion of ethnic minorities, and other relevant characteristics in order to adjust for potential unobserved time-varying heterogeneity.

The results shown in models (2) and (3) indicate tendencies of saturation in the positive association between income inequality and income segregation as the

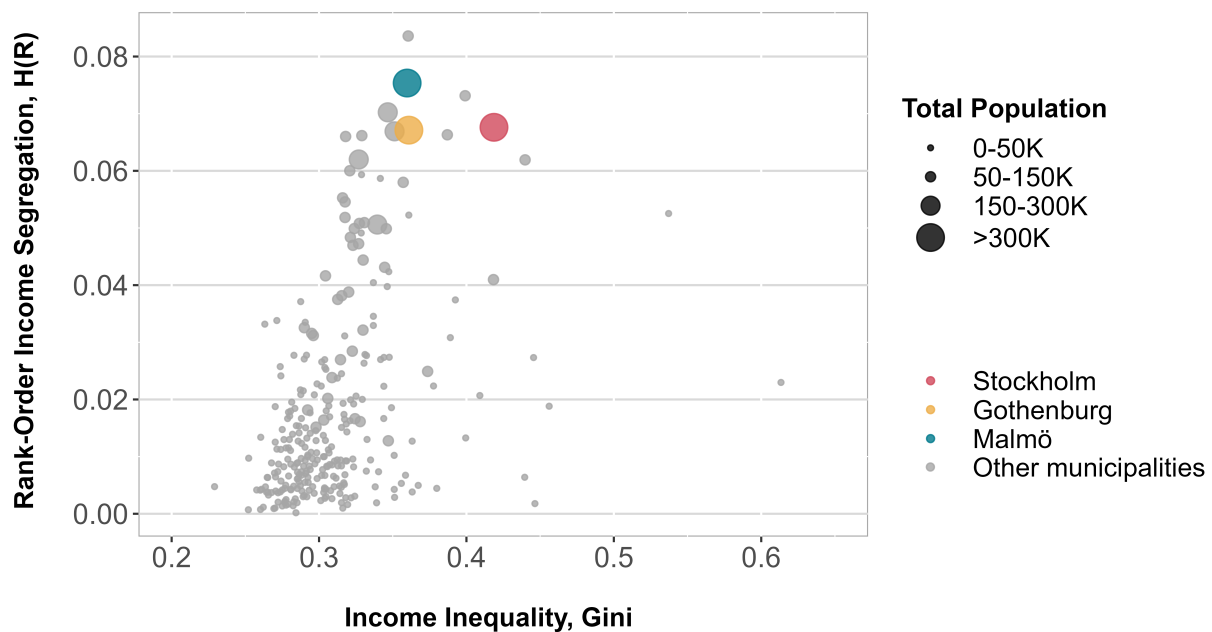


Figure 2: Rank-order income segregation and income inequality in 2017 in Sweden's 290 municipalities. *Notes:* Segregation is measured using the rank-order information theory index (H^R). Calculations are based on DeSO-sized neighborhoods. The size of the points represents size of the total population in each municipality in 2017. The colored points show the three most populated municipalities, whereas the light gray points represent the rest of the municipalities.

Gini coefficient increases, meaning that small-to-moderate increases in income inequality are especially strongly linked to growing segregation, whereas the link starts weakening at very large increases in inequality, approximately half of a Gini point in size, which we should note are very rare (see Figure 2).⁶ Model (4), which incorporates variation over time by including an interaction between income inequality and year, also shows a clear positive association between income inequality and income segregation. For ease of comparison, see the marginal effects figures for models (3) and (4) in Figure A1 of the online supplement.

Figure 2 visualizes the relationship between income inequality and segregation across all 290 municipalities in Sweden in 2017. Looking at the change in relationship between inequality and segregation over time, we calculate the bivariate correlation between the two as 0.30 ($p < 0.001$) in 1990 and 0.43 ($p < 0.001$) in 2017. The observed correlation for our latest data point, 2017, is about 93 percent of the correlation reported by Bischoff and Reardon (2014) for the United States (0.46). As in the United States, the positive association between income inequality and levels of income segregation has strengthened over time.

Having established a close link between growing inequality and segregation, in what follows we provide a detailed look into the nature and dimensions of income segregation between neighborhoods by focusing on the three largest Swedish municipalities, Stockholm, Gothenburg, and Malmö. These three cities have higher levels

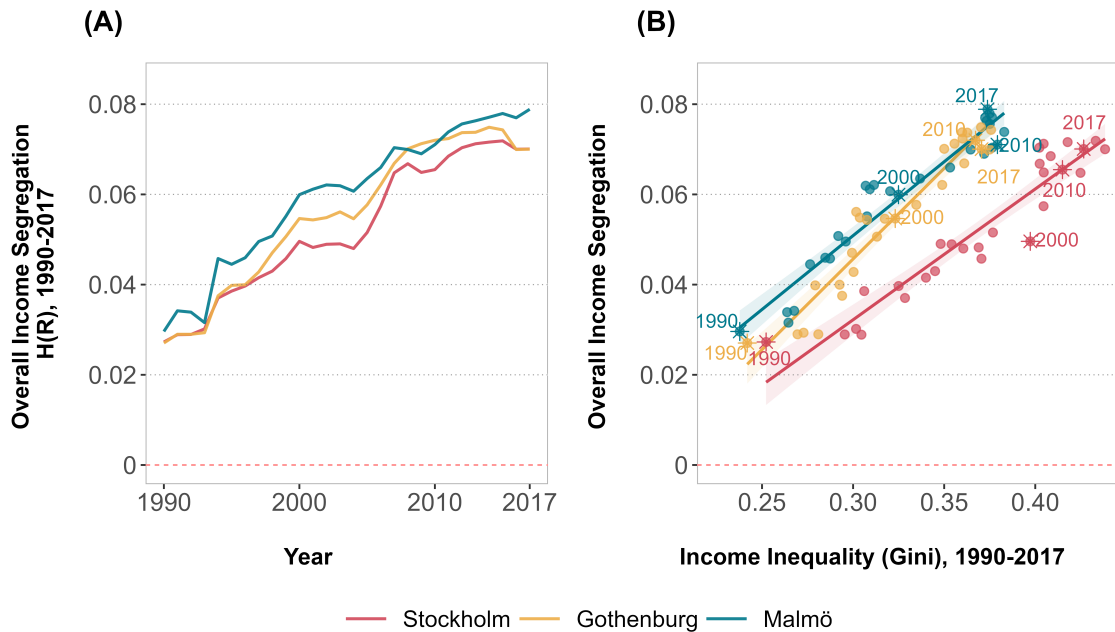


Figure 3: Rank-order income segregation (A) and income inequality (B) between 1990 and 2017 in Sweden's three largest municipalities. *Notes:* Segregation is measured using the rank-order information theory index (H^R), and income inequality is measured with the Gini index. Calculations are based on DeSO-sized neighborhoods. Colors show the three most populated municipalities, and the different colored lines in panel (B) show the linear relationship between inequality and segregation over time.

of income inequality and segregation compared with the majority of the smaller cities in Sweden while closely fitting the overall trend in the country, facilitating international comparison (Comandon and Veneri 2021).

Trends in Income Inequality and Income Segregation

Figure 3 visualizes the trends in income inequality and income segregation since 1990 in Sweden's three major municipalities. Panel (A) shows the overall level of income segregation measured with the rank-order information theory index (H^R) across the three municipalities. By 2017, levels of segregation in the three cities were about three times as high as their 1990 levels. Although Malmö had higher levels of segregation than Gothenburg and Stockholm throughout the period, segregation followed a similar path in each of the three cities.⁷ Panel (B) plots the level of income inequality (Gini) on the horizontal axis and rank-order income segregation (H^R) on the vertical axis. Note the strong positive association between income inequality and income segregation in all three cities.

To present a more detailed picture of the nature of income segregation in the three cities, Figure 4(A) shows levels of segregation in 2017 at each income percentile threshold. In all three cities, we see that segregation is characterized by concentrated affluence; levels of segregation are most defined for individuals close to the 90th

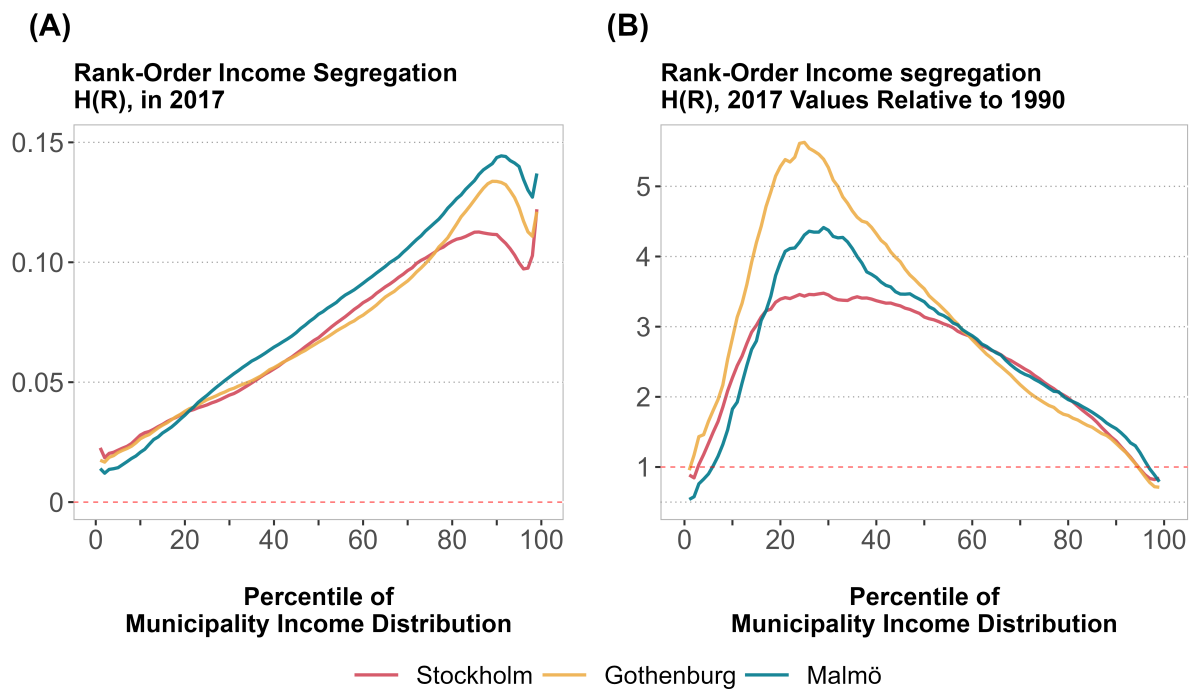


Figure 4: Trend in income segregation between 1990 and 2017. *Notes:* Segregation is measured using the rank-order information theory index (H^R). Calculations are based on DeSO-sized neighborhoods. (A) Percentile-based rank-order income segregation in 2017. The values for each income percentile show the degree of segregation between the population group located below the threshold for that percentile, and the group that is equal to and above the threshold. (B) Percentile-based rank-order income segregation in 2017 (as shown in panel (A)) relative to values in 1990. Values above one indicate an increase in segregation, values below one a decrease in segregation.

percentile income group. Although levels of segregation are very similar across the three cities for income thresholds below the 75th percentile, Malmö has the highest levels of concentrated affluence in 2017, followed by Gothenburg and Stockholm (see Figure A2 of the online supplement for the rank-order income segregation at each percentile threshold in the three cities over time).

Figure 4(B) shows how levels of segregation at each income percentile threshold have changed between 1990 and 2017 as income inequality increased. Although concentrated poverty is relatively low in all three cities (panel (A)), panel (B) shows a three- to fivefold increase in segregation for the bottom quartile vis-à-vis higher income groups, whereas the concentration of affluence has remained stable or somewhat decreased over this time period.⁸ Hence, the impact of growing income inequality in Sweden is most expressed as an increase in concentrated poverty.

Figure 5 provides another lens on the spatial divide between low- and high-income groups. It visualizes the spatial concentration of rich and poor residents, graphed as the deviation (in percentages) in the median income of small neighborhoods, defined as 100-by-100-meter adjacent squares, from the municipality's median income in 1990 and in 2017. The blue colors on the maps show neighbor-

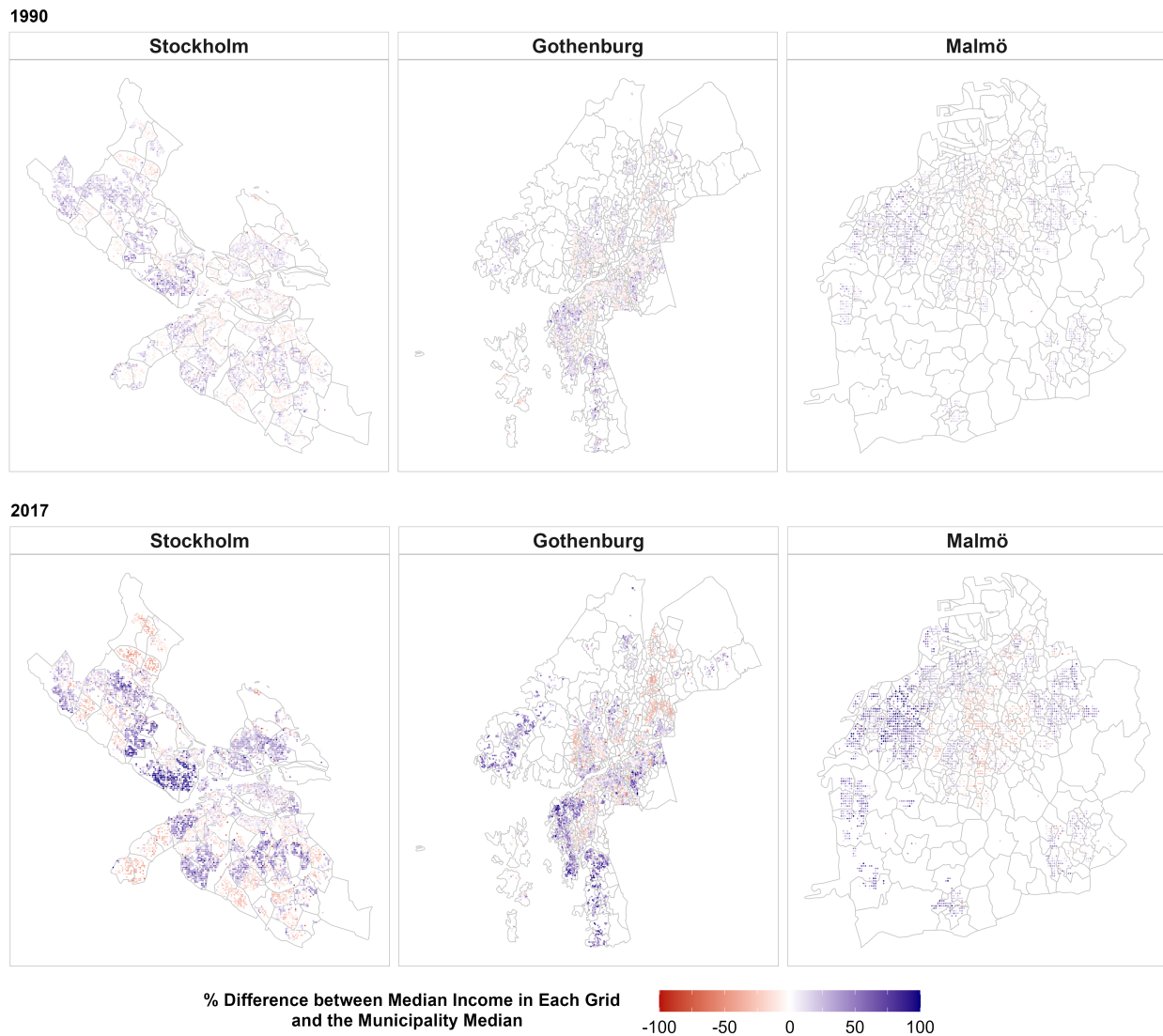


Figure 5: Income inequality between neighborhoods in the three municipalities in 1990 and 2017. *Notes:* The figure presents the percentage difference between the median income in each 100-by-100-meter residential grid and the municipality median income for 1990 and 2017. Zero indicates no difference; positive (negative) values indicate a higher (lower) income in a given neighborhood. The scale has been capped at 100 percent at both extremes. Each dot represents a 100-by-100-meter square neighborhood. Neighborhoods are adjacent and non-overlapping. Neighborhood populations comprise adults aged 18 to 65 in our sample who were registered as resident within these grids. Grids where only a few people reside are not shown for reasons of privacy. There are in total 8,790, 10,370, and 4,213 small neighborhoods in 2017 in Stockholm, Gothenburg, and Malmö, respectively.

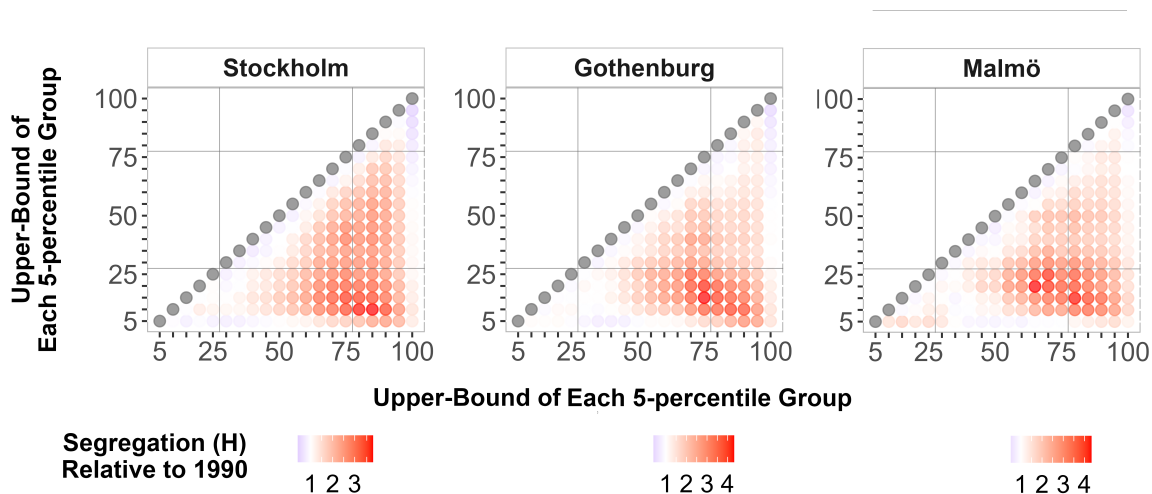


Figure 6: Residential income segregation (H) between each five-percentile income group in 2017 across Swedish municipalities, relative to 1990. *Notes:* Each five-percentile income group is plotted at its upper bound on the horizontal and vertical axes. Segregation is measured between each pair of five-percentile income groups using the two-group information theory index (H). The horizontal and vertical lines within the figures show the lower and upper 25-percentile income groups and the interquartile range. Calculations are based on DeSO-sized neighborhoods. Segregation is measured using Theil's index (H).

hoods in which levels of income are higher than the city median; the red colors show neighborhoods where levels of income are lower than the city median. Darker colors represent the areas in which the deviation from the municipal median is greatest. From this figure, we can observe that areas that were more affluent in 1990 had become even richer by 2017, and, similarly, areas that were relatively poor in 1990 had become even poorer by 2017. We also see that both high-poverty areas and affluent areas in 1990 had become more homogenous by 2017 and had expanded into neighboring areas. In sum, levels of income in most neighborhoods deviate more from the municipal median in 2017 than in 1990.

Next, we look more closely at patterns of segregation within and between different income groups by splitting the population into 20 equal-sized five-percentile groups in order to document changes in segregation between these small, but meaningful, groups. Figure 6 visualizes the levels of segregation in 2017 relative to 1990 values between pairs of five-percentile income groups. Each five-percentile group is plotted at its upper bound on the horizontal and vertical axes. For example, the uppermost five-percentile income group is plotted at 100 on both axes, whereas the income groups between the 91st and 95th percentile are plotted at 95. Because the diagonal represents the group's degree of segregation from itself, and is thus meaningless, it is marked with gray dots. Darker colors indicate larger increases in segregation over time. For ease of comparison, we include reference lines to mark income groups in the bottom and top quartiles of the income distribution and the interquartile range.

A first thing to take away from Figure 6 is the relative stability of segregation within the top income groups, as indicated by the light colors in the top right

corner. Although income inequality has increased substantially over the years due to growing levels of income among top earners, this has not translated into stronger residential segregation at the top. Instead, we observe a slight *decrease* in segregation within the top 10 percent in all three cities. The level of segregation within the below-median income groups has also been relatively stable, although in Malmö we observe a slight increase in the segregation of the poorest group (lowermost five-percentile group) from other groups in the bottom quartile (bottom left corner). In addition to the broader trends we observed in Figure 4, indicating that income segregation had increased especially for lower income groups, closely examining five-percentile groups in Figure 6 adds to our understanding that the largest increases in segregation took place near, but not at, the top and bottom of the income distribution. We also see a considerable increase in segregation among the median income group (interquartile range), primarily in Stockholm.

In sum, we find that change in segregation in the three most populous municipalities in Sweden between 1990 and 2017 is characterized by an increase in poverty segregation. Whereas income segregation has been stable within bottom and top quartile income groups, we find a three- to fourfold increase in segregation of the income groups below the 25th percentile from the higher income groups, especially from those between the 70th- and 85th-percentile income groups.

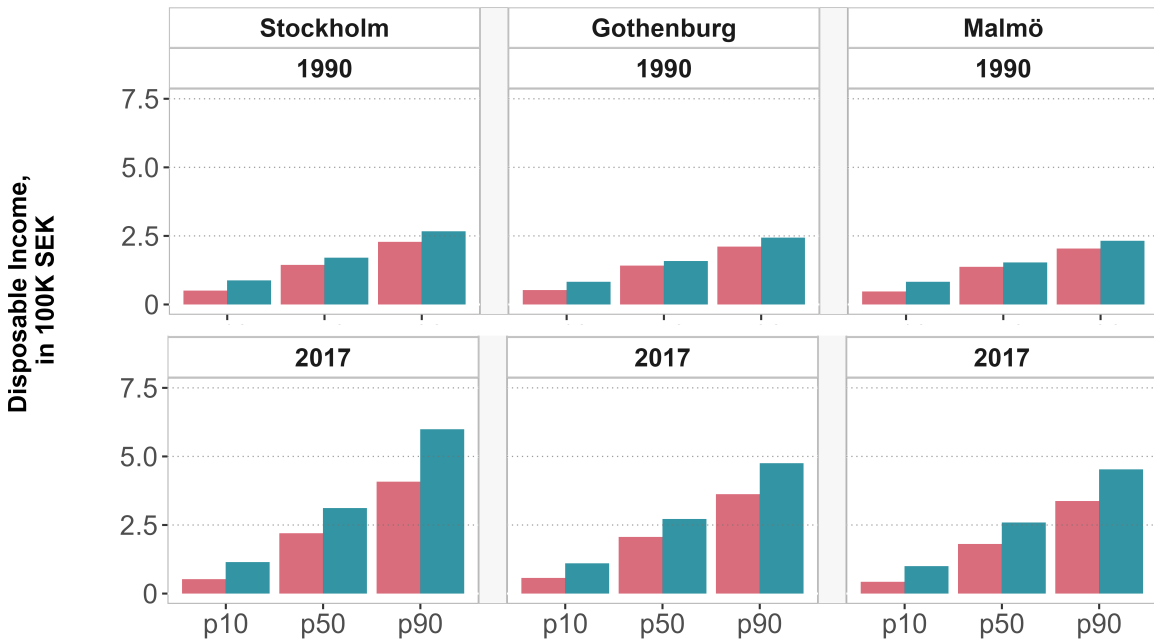
Segregation among the Ethnic Majority and Minority Groups

Further detailing the nature of segregation in Sweden, this section compares income inequality and segregation among the Swedish majority and ethnic minority groups (residents with a non-Western ancestry). To start, Figure 7(A) presents the levels of disposable income for individuals in the ethnic majority and minority groups in 1990 and 2017. In both years, in all three municipalities, and at each income rank, the majority group has a higher level of income than the minority group. Although income differences were relatively low in all three cities in 1990, by 2017, the top 10 percent of income earners in the majority group had accrued around four to five times the income of the lowest 10 percent. Despite overall lower levels of income, income inequality is more pronounced among the ethnic minority group, where the top 10 percent of income earners has about eight times the level of income of the lowest 10 percent in Stockholm and in Malmö and about six times in Gothenburg.

Figure 7(B) shows how income segregation has changed over time among the majority and minority groups. In all three municipalities, growing income inequality within the majority population has been accompanied by increased levels of income segregation. In contrast, income segregation among ethnic minorities remained stable throughout the 1990s and only started growing after 2000. By 2017, income segregation among minorities had reached the level of income segregation found among the majority group in Stockholm, whereas in Gothenburg and Malmö, income segregation remained more pronounced among the Swedish majority group.

One explanation for these findings is that only in Stockholm, and only in recent years, ethnic minority groups have been able to enter the residential market in more affluent, Swedish-majority neighborhoods. We return to this point in our conclusion. Rates of segregation between the majority group and ethnic minorities,

(A)



(B)

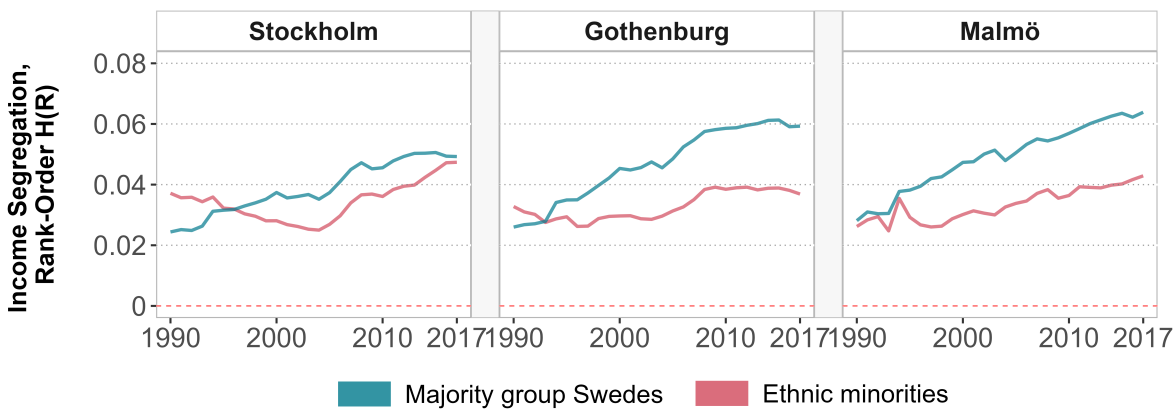


Figure 7: Within-group income inequality and income segregation for the majority group and non-Western origin ethnic minorities. *Notes:* (A) Yearly disposable income of the 10th, 50th, and 90th percentile income groups in 1990 (upper panel) and 2017 (lower panel). (B) Trends in (average) rank-order income segregation among majority- and minority-group individuals, 1990 to 2017. Segregation is measured using the rank-order information theory index (H^R). Calculations are based on DeSO-sized neighborhoods. Income rank in panel (B) is measured separately for each year, municipality, and demographic group.

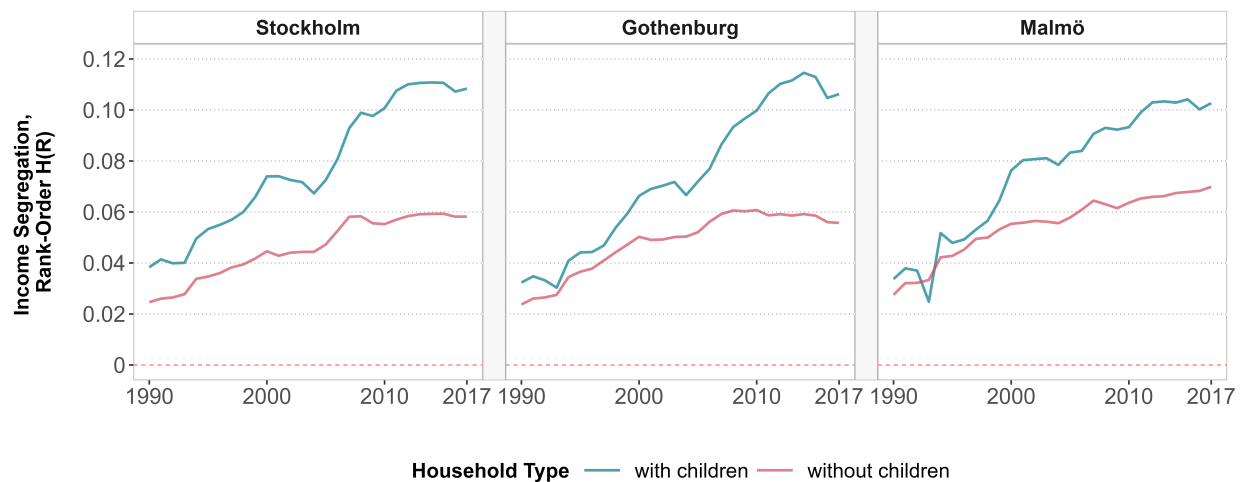


Figure 8: Trend in segregation among individuals with or without a child in the household. *Notes:* Segregation is measured using the rank-order information theory index (H^R). Calculations are based on DeSO-sized neighborhoods. Income rank is measured separately for each year, municipality, and demographic group.

however, remain high and contribute to the overall level of income segregation in the three municipalities. To illustrate, the correlation between the proportion of ethnic minorities in each 100-by-100-meter residential area and the percentage income difference from the city median was -0.65 in 2017 (for a visual representation of the spatial distribution of income see Figure 5, and for the spatial distribution of ethnic minorities see Figure A3 of the online supplement). Thus, notwithstanding small variations between the three cities (-0.71 in Malmö, -0.61 in Gothenburg, and -0.66 in Stockholm), a higher proportion of ethnic minorities in a given neighborhood goes together with a lower median income.

Segregation among Individuals with and without Children

In this final section of our results, we compare levels and trends in segregation between individuals with and without a child in the household. Figure 8 visualizes the over-time trend in segregation among the two groups. Note that in all three cities, segregation among individuals with one or more children in the household has been higher, and has increased at a much higher pace, than among those without children. For individuals with children, income segregation in 2017 was triple the level of segregation in 1990, whereas segregation among individuals without children in the home was about 2.4 times the level in 1990.

In additional analyses included in our online supplement, we find that the rise in income segregation among individuals with a child in the household is driven mainly by growing segregation of poverty, which increased four- to sevenfold for the bottom quartile vis-à-vis higher income groups in all three municipalities (see Figure A4 of the online supplement). Thus, although the rise of income inequality has translated into higher levels of segregation for low- and high-income groups

across the general population, among individuals with a child in the household it is especially expressed as growing concentration of poverty.

Discussion

This article set out to explore the link between income inequality and segregation in “egalitarian” Sweden and the generalizability of their close alignment as observed in the American context. As in the United States, we find that over the past 30 years, growing income inequality in Sweden has been accompanied by increased levels of income segregation. In fact, the bivariate correlation between income inequality and income segregation is about 93 percent of that found in the United States (Bischoff and Reardon 2014), which indicates a striking similarity across these two very different settings.

Although income segregation in Sweden has increased across the population, as in the United States, it is most strongly expressed among the (self-segregating) affluent and has grown at a faster pace among individuals with children (cf. Owens 2016). In Sweden, like the United States, low-income families lack the resources to make residential choices based on their school or neighborhood preferences (DeLuca and Jang-Trettien 2020). This similarity between the United States and Sweden is notable given the stark differences between the two countries’ school systems. Whereas residential real estate prices and school resources are highly correlated in the United States (Duncan and Murnane 2011; Lareau and Goyette 2014; Lareau 2014), Swedish schools are free and municipalities tend to provide *more* school funding to schools with a larger proportion of disadvantaged students (Betänkande av Utredningen om en mer Likvärdig Skola 2020). The surprisingly close correspondence between the two countries is testament to the impact of Sweden’s school allocation procedures for (public) municipal schools, which place substantial weight on geographical proximity, as well as the advent of (independent) voucher schools, introduced in 1992, that operate on a first-come first-served basis. Sweden’s proximity-based allocation system for public schools, as is also the case in Norway (Drange and Telle 2020) and Finland (Kauppinen, van Ham, and Bernelius 2022), leads affluent parents to make residential choices based on school preferences, which counteracts the country’s universalistic education policies (Böhlmark et al. 2016).

Beyond these similarities, segregation in Sweden takes a distinct form. Whereas in the United States, patterns of spatial income segregation are best characterized by a growing segregation of affluence, our findings indicate that Sweden has over the last 30 years also experienced a growing isolation of low-income groups (see also Musterd et al. 2017). In a further contrast to the United States, levels of segregation in Sweden are *lower* among the country’s ethnic non-Western minority population vis-à-vis the ethnic majority. Although there is some debate on this point among U.S. scholars—for example, between Reardon et al. (2018) and Logan et al. (2020)—we unequivocally find lower and more stable levels of segregation among non-Western minorities in Sweden. These lower levels of income segregation, combined with overall lower levels of disposable income and a recent increase in segregation of the affluent minority population, reflect the fact that until recently affluent minorities

were unable to find their way into ethnic majority–group neighborhoods. This finding confirms previous scholarship, in which Fjellborg (2021) notes that foreign-born persons have a higher likelihood of moving out of poorer areas only if they themselves have a higher income (for the U.S. context, see South, Huang, and Spring 2022). We find that only a very small number of minority-group residents live in affluent neighborhoods. By 2017, although more than half of the Swedish majority group lived in neighborhoods with a substantial presence of affluent neighbors, only one in five people in non-Western ethnic minority groups did. Housing assignment policies, low levels of income among the minority group, opportunity constraints due to the limited public rental housing available in more affluent parts of cities, and other factors affecting residential choice such as kinship ties, limit ethnic minorities' ability to enter more affluent and majority-group housing markets (Fjellborg 2022; Mulder and Cooke 2009; Vogiazides and Mondani 2020).

Conclusions

Taken together, then, drawing on a detailed analysis of individual-level population data, we find patterns of income inequality and income segregation in traditionally “egalitarian” Sweden that are remarkably similar to those observed across the Atlantic in a country regarded as the paragon of inequality. As such, our study of the “least likely case” of Sweden complements U.S.-based scholarship by presenting new evidence of a close relationship between growing inequality and segregation. On the other hand, as was noted in our introduction, Sweden stands out as the European country in which levels of inequality have grown at the fastest pace over recent decades. We therefore caution against taking our findings to mean that shifts toward higher levels of inequality and segregation are inevitable. In fact, Sweden has historically shown that the opposite can be true.

Although our article's principal aim is empirical description, we suggest that growing income segregation in Sweden is best understood as the product of changing welfare state policies and liberalization of the housing and school market. Scholars describe the period from 1990 to 2010 as marked by austerity and market liberalism and as characterized by a steady move away from the social-democratic welfare state toward a more liberal model (Hedin et al. 2012; Musterd et al. 2017). Beyond neoliberalism and deregulation more broadly, (Hedin et al. 2012) note the gradual abandonment of tenure neutrality, which until 1992 had been a cornerstone of Swedish housing policy. Abandoning tenure neutrality has led to segmentation in the housing market and has increased disparities in housing costs and variable forms of tenure. As a consequence, between 2000 and 2011 almost half of the (fixed-rent) public housing stock has been converted into private rental or cooperative tenure forms in different parts of Sweden's cities (Andersson, Wimark, and Malmberg 2022; Fjellborg 2022). Furthermore, whereas private rental companies previously had to abide by the rent levels set by public housing companies and tenants' organizations, since 2010, private companies have been able to directly influence rental market prices. Taken together, these developments have led to a bifurcation of housing prices, especially in Sweden's three largest cities (Andersson and Kährnik 2015) and are likely to have had a substantial impact on income segre-

gation, as more affordable public rental housing remains only in more peripheral and less desirable parts of these municipalities.

With regard to policy more generally, our findings suggest that the paradigmatic difference in social welfare state policies between the United States and Sweden—the former a liberal welfare state, the latter the prototypical social-democratic model (Esping-Andersen 1999)—has been insufficient to keep the two countries from following a very similar path. Despite social welfare transfers in housing in Sweden and relatively high levels of rent control, a shift toward liberalizing housing policy has had a marked effect on segregation. Other strategies, such as self-selection into affluent neighborhoods, tend to be available to those who can navigate the queue-based public rental market and those who can afford to buy or rent a private dwelling, favoring high-income individuals and those with Swedish ancestry. Similarly, the close correspondence between transatlantic trends in segregation among families with children is a sign that different school policies do not always lead to different results. Through different means and operating within varying school systems, in Sweden as in the United States, advantaged families effectively self-segregate, resulting in a higher concentration of affluence.

Our study is not without its shortcomings. Methodologically, using DeSOs, we improve on extant scholarship on segregation that has relied on neighborhood-area specifications, which suffer from the modifiable areal unit problem. Nonetheless, it is advisable to compare different area specifications (Malmberg et al. 2018; Reardon et al. 2008), which we have not done in this study. That said, we obtain comparable results based on the traditional neighborhood definition used in the Swedish literature (SAMS), and the overall trends in segregation we describe in this article are qualitatively equivalent to such robustness checks. However, because of the different unit sizes, a comparison between cities cannot readily be made using SAMS.

Using full-population individual-level income data over a long period of time, and relying on entropy-based segregation measures, we have produced segregation statistics that are comparable over time and across cities in Sweden. However, we have not provided a mechanistic answer to *why* segregation has changed the way it has. Instead, this article presents a detailed analysis of how income segregation has evolved over time, between and within different income thresholds and sociodemographic groups in Sweden's largest three municipalities. Our findings show that income segregation is not uniform across income groups, nor does it change at the same rate over time (cf. Nieuwenhuis et al. 2020).

In light of these findings, we suggest that future research on residential segregation in Sweden and elsewhere evaluate the mechanisms by which spatial separation between income groups persists over time by taking into account demographic and temporal heterogeneity. One of the questions that our study has not been able to answer is the extent to which levels of segregation among low-income groups have increased as a result of demographic change, such as migration, birth rates, and death rates (BråmÅ 2008), or through patterns of in- and out-mobility among particular income groups. Furthermore, better understanding why we see differences in the way majority and minority groups navigate the residential market would help policy makers identify barriers and make better informed policy decisions. We

hope our research has paved a path toward an exploration of these questions in future research.

Notes

- 1 Although the Swedish education system is based on equity and equality ideals, it is important to note that the effectiveness of the free school choice policy as a desegregation measure has been disputed (Fjellman, Yang Hansen, and Beach 2019).
- 2 In terms of their population, Swedish DeSO units resemble U.S. block groups rather than tract-level units, which are more commonly used in segregation research in the United States.
- 3 Note that we take as our unit of analysis individuals rather than households, which are more commonly studied in U.S.-based research. We do so because Swedish administrative data are micro-level, individual, data that do not provide household-level identifiers. Given that Sweden has high levels of cohabitation (Härkönen, Brons, and Dronkers 2021), and it is difficult to distinguish cohabiting individuals from non-cohabiting neighbors using administrative data, we proceeded with individual-level analyses. We acknowledge that there may be some discrepancies between household-level and individual-level analyses, owing to the different number of units in the analysis and given that total household income may fall into a different income rank than individuals' income.
- 4 Following Mood's (2017) suggestion, zero and negative incomes are coded as missing and are excluded from the analysis. Excluding zero and negative income earners leads to a loss of 0.6 percent of the population in 1990 and 0.2 percent in 2017. The yearly consumer price index levels are taken from Statistics Sweden (2021). It is important to note that due to changes in the measurement of disposable income over the years as well as changes in taxation policies, reported income inequalities from 1990 onwards may be upwardly biased (Björklund 2020).
- 5 Sweden does not record any information on individuals' ethnicity, and our analyses thus rely on country-of-birth information. Non-Western countries are countries other than the following: Sweden, Norway, Denmark, Iceland, Finland, Luxemburg, Belgium, the Netherlands, Germany, Italy, France, Malta, Greece, Cyprus, Spain, Portugal, Canada, the Australia, Ireland, New Zealand, the United Kingdom, and the United States. As a result of data limitations, it has not been possible to differentiate some of the Balkan and Baltic countries, or Russia and other countries that were part of the Soviet Union. These countries have therefore been coded as non-Western.
- 6 Although a direct comparison is not possible, we find smaller estimated coefficients than those reported by Reardon and Bischoff (2011) for the largest metropolitan areas in the United States (0.385). Due to the significantly smaller population size of Sweden, our analyses are based on areas that are much less populated than those in the United States. As such, an important part of the between-country differences is likely to be driven by the smaller size of our geographical units as well as by the larger time intervals used in U.S.-based analyses that confront data limitations we do not.
- 7 Although the index score of 0.07 to 0.08 represents a historically high level of segregation for Stockholm, Malmö, and Gothenburg, it is relatively low compared with the levels found in the United States. Bearing in mind that it is not possible to compare levels of segregation between countries, Reardon (2011) reported an index score of around 0.9 for income segregation in San Francisco in 2000.

8 Whereas in the main text we study income segregation using continuous income measures, as a comparison we also measured two-group income segregation between low-, medium-, and high-income groups using the information theory index, H , as well as the dissimilarity index, D . These measures also confirm our findings in the main text regarding the increasing separation of low income groups from especially high income individuals. The relevant figures are presented in Figure A5 of the online supplement.

References

- Andersson, Eva K., Thomas Wimark, and Bo Malmberg. 2022. "Tenure Type Mixing and Segregation." *Housing Studies* 37(1):26–49. <https://doi.org/10.1080/02673037.2020.1803803>.
- Andersson, Eva K., Torkild Hovde Lyngstad, and Bart Sleutjes. 2018. "Comparing Patterns of Segregation in North-Western Europe: A Multiscalar Approach." *European Journal of Population* 34(2):151–68. <https://doi.org/10.1007/s10680-018-9477-1>.
- Andersson, Roger, and Anneli Kährik. 2015. "Widening Gaps: Segregation Dynamics during Two Decades of Economic and Institutional Change in Stockholm." In *East Meets West: New Perspectives on Socio-economic Segregation in European Capital Cities*, edited by T. Tammaru, M. van Ham, S. Marcińczak, and S. Musterd, pp. 134–55. Routledge. <https://doi.org/10.4324/9781315758879-13>.
- Atkinson, Anthony B., Thomas Piketty, and Emmanuel Saez. 2011. "Top Incomes in the Long Run of History." *Journal of Economic Literature* 49(1):3–71. <https://doi.org/10.1257/jel.49.1.3>.
- Bernelius, Venla, and Mari Vaattovaara. 2016. "Choice and Segregation in the 'Most Egalitarian' Schools: Cumulative Decline in Urban Schools and Neighbourhoods of Helsinki, Finland." *Urban Studies* 53(15):3155–71. <https://doi.org/10.1177/0042098015621441>.
- Betänkande av Utredningen om en mer Likvärdig Skola. 2020. *En Mer Likvärdig Skola – Minskad Skolsegregation och Förbättrad Resurstilldelning*. Statens Offentliga Utredningar (SOU) 2020:28. Stockholm: Norstedts Juridik. <https://www.regeringen.se/rattsliga-dokument/statens-offentliga-utredningar/2020/04/sou-202028/>.
- Bischoff, Kendra, and Sean F. Reardon. 2014. "Residential Segregation by Income, 1970–2009." In *Diversity and Disparities: America Enters a New Century*, edited by J. R. Logan, pp. 208–33. New York: Russell Sage Foundation.
- Björklund, Anders. 2020. "Can We Really Rely on Income Distribution Statistics? Some Issues in the Swedish Data." Dynamics of Inequality across the Lifecourse: Structures and Process (DIAL) Working Paper Series 07/2020. https://dynamicsofinequality.org/wp-content/uploads/2020/02/7_20_bjorklund.pdf.
- Böhlmark, Anders, Helena Holmlund, and Mikael Lindahl. 2016. "Parental Choice, Neighbourhood Segregation or Cream Skimming? An Analysis of School Segregation after a Generalized Choice Reform." *Journal of Population Economics* 29(4):1155–90. <https://doi.org/10.1007/s00148-016-0595-y>.
- Boterman, Willem, Sako Musterd, Carolina Pacchi, and Costanzo Ranci. 2019. "School Segregation in Contemporary Cities: Socio-spatial Dynamics, Institutional Context and Urban Outcomes." *Urban Studies* 56(15):3055–73. <https://doi.org/10.1177/0042098019868377>.

- Bråmã, Åsa. 2008. "Dynamics of Ethnic Residential Segregation in Göteborg, Sweden, 1995–2000." *Population, Space and Place* 14(2):101–17. <https://doi.org/10.1002/psp.479>.
- Comandon, Andre, and Paolo Veneri. 2021. "Residential Segregation between Income Groups in International Perspective." In *Urban Socio-economic Segregation and Income Inequality*, edited by M. van Ham, T. Tammaru, R. Ubareviciene, and H. Janssen, The Urban Book Series. Springer Nature.
- Costa, Rafael, and Helga A. G. De Valk. 2018. "Ethnic and Socioeconomic Segregation in Belgium: A Multiscalar Approach Using Individualised Neighbourhoods." *European Journal of Population* 34(2):225–50. <https://doi.org/10.1007/s10680-018-9480-6>.
- DeLuca, Stefanie, and Christine Jang-Trettien. 2020. "Not Just a Lateral Move: Residential Decisions and the Reproduction of Urban Inequality." *City & Community* 19(3):451–88. <https://doi.org/10.1111/cico.12515>.
- Drange, Nina, and Kjetil Telle. 2020. "Segregation in a Universal Child Care System: Descriptive Findings from Norway." *European Sociological Review* 36(6):886–901. <https://doi.org/10.1093/esr/jcaa026>.
- Duncan, Greg J., and Richard J. Murnane. 2011. *Whither Opportunity? Rising Inequality, Schools, and Children's Life Chances*. New York: Russell Sage Foundation.
- Esping-Andersen, Gøsta. 1999. *Social Foundations of Postindustrial Economies*. Oxford University Press.
- Fjellborg, Andreas Alm. 2022. "Residential Mobility and Spatial Sorting in Stockholm 1990–2014: The Changing Importance of Housing Tenure and Income." *International Journal of Housing Policy* 22(2):198–224. <https://doi.org/10.1080/19491247.2021.1893117>.
- Fjellborg, Andreas Alm. 2021. "Leaving Poor Neighbourhoods: The Role of Income and Housing Tenure." *Housing Studies* 36(7):1122–42. <https://doi.org/10.1080/02673037.2020.1748177>.
- Fjellman, Anna-Maria, Kajsa Yang Hansen, and Dennis Beach. 2019. "School Choice and Implications for Equity: The New Political Geography of the Swedish Upper Secondary School Market." *Educational Review* 71(4):518–39. <https://doi.org/10.1080/00131911.2018.1457009>.
- Fotheringham, A. S., and D. W. S. Wong. 1991. "The Modifiable Areal Unit Problem in Multivariate Statistical Analysis." *Environment and Planning A: Economy and Space* 23(7):1025–44. <https://doi.org/10.1068/a231025>.
- Gerring, John. 2007. "Is There a Viable Crucial-Case Method?" *Comparative Political Studies* 40(3):231–53. <https://doi.org/10.1177/0010414006290784>.
- Härkönen, Juho, M. D. (Anne) Brons, and Jaap Dronkers. 2021. "Family Forerunners? Parental Separation and Partnership Formation in 16 Countries." *Journal of Marriage and Family* 83(1):119–36. <https://doi.org/10.1111/jomf.12682>.
- Hedin, Karin, Eric Clark, Emma Lundholm, and Gunnar Malmberg. 2012. "Neoliberalization of Housing in Sweden: Gentrification, Filtering, and Social Polarization." *Annals of the Association of American Geographers* 102(2):443–63. <https://doi.org/10.1080/00045608.2011.620508>.

- James, David R., and Karl E. Taeuber. 1985. "Measures of Segregation." *Sociological Methodology* 15:1–32. <https://doi.org/10.2307/270845>.
- Jargowsky, Paul A. 2018. "The Persistence of Segregation in the 21st Century." *Law & Inequality* 36(2):207–30.
- Jargowsky, Paul A., and Christopher A. Wheeler. 2017. "Economic Segregation in US Metropolitan Areas, 1970–2010." Posted September 25, 2019, on SSRN. <https://doi.org/10.2139/ssrn.3454612>.
- Jarvis, Benjamin, Jutta Kawalerowicz, and Sarah Valdez. 2017. "Impact of Ancestry Categorizations on Residential Segregation Measures Using Swedish Register Data." *Scandinavian Journal of Public Health* 45(17S):62–65. <https://doi.org/10.1177/1403494817702341>.
- Kauppinen, Timo M., Maarten van Ham, and Venla Bernelius. 2022. "Understanding the Effects of School Catchment Areas and Households with Children in Ethnic Residential Segregation." *Housing Studies* 37(9):1625–49. <https://doi.org/10.1080/02673037.2020.1857707>.
- Keeley, Brian. 2015. *Income Inequality: The Gap between Rich and Poor*. OECD Insights. Paris: OECD Publishing. <https://doi.org/10.1787/9789264246010-en>.
- Keuschnigg, Marc, Selcan Mutgan, and Peter Hedström. 2019. "Urban Scaling and the Regional Divide." *Science Advances* 5(1). <https://doi.org/10.1126/sciadv.aav0042>.
- Lareau, Annette. 2014. "Schools, Housing, and the Reproduction of Inequality." In *Choosing Homes, Choosing Schools*, edited by A. Lareau and K. Goyette. New York: Russell Sage Foundation.
- Lareau, A, and Kimberly Goyette (eds.). 2014. *Choosing Homes, Choosing Schools*. New York: Russell Sage Foundation.
- Logan, John R. 2002. "Separate and Unequal: The Neighborhood Gap for Blacks, Hispanics and Asians in Metropolitan America." Report, Lewis Mumford Center for Comparative Urban and Regional Research, Albany, NY.
- Logan, John R., Andrew Foster, Hongwei Xu, and Wenquan Zhang. 2020. "Income Segregation: Up or Down, and for Whom?" *Demography* 57(5):1951–74. <https://doi.org/10.1007/s13524-020-00917-0>.
- Malmberg, Bo, Eva K. Andersson, Michael M. Nielsen, and Karen Haandrikman. 2018. "Residential Segregation of European and Non-European Migrants in Sweden: 1990–2012." *European Journal of Population* 34(2):169–93. <https://doi.org/10.1007/s10680-018-9478-0>.
- Malmberg, Bo, and William A. V. Clark. 2021. "Migration and Neighborhood Change in Sweden: The Interaction of Ethnic Choice and Income Constraints." *Geographical Analysis* 53(2):259–82. <https://doi.org/10.1111/gean.12250>.
- Massey, Douglas S., and Nancy A. Denton. 1993. *American Apartheid: Segregation and the Making of the Underclass*. Cambridge, MA: Harvard University Press.
- McCall, Leslie, and Christine Percheski. 2010. "Income Inequality: New Trends and Research Directions." *Annual Review of Sociology* 36(1):329–47. <https://doi.org/10.1146/annurev.soc.012809.102541>.

- Mijs, Jonathan J. B., and Elizabeth L. Roe. 2021. "Is America Coming Apart? Socioeconomic Segregation in Neighborhoods, Schools, Workplaces, and Social Networks, 1970–2020." *Sociology Compass* 15(6):e12884. <https://doi.org/10.1111/soc4.12884>.
- Mood, Carina. 2017. "More Than Money: Social Class, Income, and the Intergenerational Persistence of Advantage." *Sociological Science* 4:263–87. <https://doi.org/10.15195/v4.a12>.
- Mulder, Clara H., and Thomas J. Cooke. 2009. "Family Ties and Residential Locations." *Population, Space and Place* 15(4):299–304. <https://doi.org/10.1002/psp.556>.
- Musterd, Sako. 2005. "Social and Ethnic Segregation in Europe: Levels, Causes, and Effects." *Journal of Urban Affairs* 27(3):331–48. <https://doi.org/10.1111/j.0735-2166.2005.00239.x>.
- Musterd, Sako, Szymon Marcińczak, Maarten van Ham, and Tiit Tammaru. 2017. "Socioeconomic Segregation in European Capital Cities. Increasing Separation between Poor and Rich." *Urban Geography* 38(7):1062–83. <https://doi.org/10.1080/02723638.2016.1228371>.
- Neckerman, Kathryn M., and Florencia Torche. 2007. "Inequality: Causes and Consequences." *Annual Review of Sociology* 33:335–57. <https://doi.org/10.1146/annurev.soc.33.040406.131755>.
- Nieuwenhuis, Jaap, Tiit Tammaru, Maarten van Ham, Lina Hedman, and David Manley. 2020. "Does Segregation Reduce Socio-spatial Mobility? Evidence from Four European Countries with Different Inequality and Segregation Contexts." *Urban Studies* 57(1):176–97. <https://doi.org/10.1177/0042098018807628>.
- OECD. 2015. *In It Together: Why Less Inequality Benefits All*. Paris: OECD Publishing. <https://doi.org/10.1787/9789264235120-en>.
- Owens, Ann. 2016. "Inequality in Children's Contexts: Income Segregation of Households with and without Children." *American Sociological Review* 81(3):549–74. <https://doi.org/10.1177/0003122416642430>.
- Owens, Ann, Sean F. Reardon, and Christopher Jencks. 2016. "Income Segregation between Schools and School Districts." *American Educational Research Journal* 53(4):1159–97. <https://doi.org/10.3102/0002831216652722>.
- Piketty, Thomas, and Emmanuel Saez. 2003. "Income Inequality in the United States, 1913–1998." *Quarterly Journal of Economics* 118(1):1–41. <https://doi.org/10.1162/00335530360535135>.
- Quillian, Lincoln. 2012. "Segregation and Poverty Concentration: The Role of Three Segregations." *American Sociological Review* 77(3):354–79. <https://doi.org/10.1177/0003122412447793>.
- Quillian, Lincoln, and Hugues Lagrange. 2016. "Socioeconomic Segregation in Large Cities in France and the United States." *Demography* 53(4):1051–84. <https://doi.org/10.1007/s13524-016-0491-9>.
- Reardon, Sean F. 2011. "Measures of Income Segregation." Stanford University. <https://cepa.stanford.edu/content/measures-income-segregation>.

- Reardon, Sean F., and Kendra Bischoff. 2011. "Income Inequality and Income Segregation." *American Journal of Sociology* 116(4):1092–153. <https://doi.org/10.1086/657114>.
- Reardon, Sean F., Kendra Bischoff, Ann Owens, and Joseph B. Townsend. 2018. "Has Income Segregation Really Increased? Bias and Bias Correction in Sample-Based Segregation Estimates." *Demography* 55(6):2129–60. <https://doi.org/10.1007/s13524-018-0721-4>.
- Reardon, Sean F., Glenn Firebaugh, David O'Sullivan, and Stephen A. Matthews. 2006. "A New Approach to Measuring Socio-spatial Economic Segregation." In *Proceedings of the 29th General Conference of the International Association for Research in Income and Wealth*, Joensuu, Finland. <http://old.iariv.org/papers/2006/reardon.pdf>.
- Reardon, Sean F., Stephen A. Matthews, David O'Sullivan, Barrett A. Lee, Glenn Firebaugh, Chad R. Farrell, and Kendra Bischoff. 2008. "The Geographic Scale of Metropolitan Racial Segregation." *Demography* 45(3):489–514. <https://doi.org/10.1353/dem.0.0019>.
- Reardon, Sean F., and David O'Sullivan. 2004. "Measures of Spatial Segregation." *Sociological Methodology* 34(1):121–62. <https://doi.org/10.1111/j.0081-1750.2004.00150.x>.
- Roberto, Elizabeth, and Jackelyn Hwang. 2017. "Barriers to Integration: Physical Boundaries and the Spatial Structure of Residential Segregation." Preprint, arXiv:1509.02574 [physics.soc-ph]. <https://arxiv.org/abs/1509.02574v3>.
- Roine, Jesper, and Daniel Waldenström. 2012. "On the Role of Capital Gains in Swedish Income Inequality." *Review of Income and Wealth* 58(3):569–87. <https://doi.org/10.1111/j.1475-4991.2011.00475.x>.
- Rothwell, Jonathan T., and Douglas S. Massey. 2010. "Density Zoning and Class Segregation in U.S. Metropolitan Areas." *Social Science Quarterly* 91(5):1123–43. <https://doi.org/10.1111/j.1540-6237.2010.00724.x>.
- Sampson, Robert J., S. W. Raudenbush, and F. Earls. 1997. "Neighborhoods and Violent Crime: A Multilevel Study of Collective Efficacy." *Science* 277(5328):918–24. <https://doi.org/10.1126/science.277.5328.918>.
- Sharkey, Patrick. 2008. "The Intergenerational Transmission of Context." *American Journal of Sociology* 113(4):931–69. <https://doi.org/10.1086/522804>.
- South, Scott J., Ying Huang, and Amy Spring. 2022. "Proximate Sources of Growth in Neighborhood Income Segregation: Class-Selective Migration versus In Situ Change." *Social Science Research* 101:102624. <https://doi.org/10.1016/j.ssresearch.2021.102624>.
- Statistics Sweden. 2020. "Population and Population Changes 1749–2020." Statistiska Centralbyrån (SCB). <https://www.scb.se/en/finding-statistics/statistics-by-subject-area/population/population-composition/population-statistics/pong/tables-and-graphs/population-statistics---summary/population-and-population-changes/9>.
- Statistics Sweden. 2021. "Consumer Price Index (1949=100)." Statistiska Centralbyrån (SCB). <http://www.scb.se/en/finding-statistics/statistics-by-subject-area/prices-and-consumption/consumer-price-index/consumer-price-index-cpi/pong/tables-and-graphs/consumer-price-index-cpi/cpi-1949100/>.
- Turner, Bengt, and Christine M. E. Whitehead. 2002. "Reducing Housing Subsidy: Swedish Housing Policy in an International Context." *Urban Studies* 39(2):201–17. <https://doi.org/10.1080/00420980120102920>.

- Valdez, Sarah. 2014. "Visibility and Votes: A Spatial Analysis of Anti-immigrant Voting in Sweden." *Migration Studies* 2(2):162–88. <https://doi.org/10.1093/migration/mnu029>.
- van Ham, Maarten, Tiit Tammaru, Ruta Ubareviciene, and Heleen Janssen (eds.). 2021. *Urban Socio-economic Segregation and Income Inequality: A Global Perspective*. Cham, Switzerland: Springer Nature. <https://doi.org/10.1007/978-3-030-64569-4>.
- van Ham, Maarten, Masaya Uesugi, Tiit Tammaru, David Manley, and Heleen Janssen. 2020. "Changing Occupational Structures and Residential Segregation in New York, London and Tokyo." *Nature Human Behaviour* 4:1124–34. <https://doi.org/10.1038/s41562-020-0927-5>.
- Vogiazides, Louisa, and Hernan Mondani. 2020. "Geographical Trajectories of Refugees in Sweden: Uncovering Patterns and Drivers of Inter-regional (Im)mobility." *Journal of Refugee Studies* 34(3):3065–90. <https://doi.org/10.1093/jrs/feaa074>.
- Wessel, Terje, and Viggo Nordvik. 2019. "Mixed Neighbourhoods and Native Out-mobility in the Oslo Region: The Importance of Parenthood." *Urban Studies* 56(5):885–905. <https://doi.org/10.1177/0042098018768452>.
- Wilson, William Julius. 2011. *When Work Disappears: The World of the New Urban Poor*. New York: Knopf Doubleday.

Acknowledgments: We would like to thank Maria Brandén, Jackelyn Hwang, Peter Hedström, and Jaap Nieuwenhuis for helpful feedback and comments on earlier versions of this manuscript. For their parts in the research on which the results are based, S.M. received funding from the Swedish Research Council (Vetenskapsrådet), grant numbers DNR 340-2013-5460, 445-2013-7681, and DNR 2020-02488, and J.J.B.M. received funding from a Marie Skłodowska-Curie Individual Fellowship, EU Commission Horizon 2020 grant number 88296, and a Veni grant (number VI.Veni.201S.003) from the Dutch Research Council.

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